

CLAIMS

1. A method of testing a biological fluid for the presence of an infection, the method including the steps of introducing a sample of biological fluid and a  
5 reagent including light amplifying compound into a reaction chamber, the light amplifying compound reacting with a substance present only in an infected sample to emit light; and immediately measuring the intensity of any light emitted from the sample.
- 10 2. A method according to claim 1 wherein the light amplifying compound reacts with a compound produced by phagocytic leukocytes in response to infection to emit light.
3. A method according to claim 2 wherein the light amplifying compound  
15 reacts with a compound produced when phagocytic leukocytes phagocytose bacteria to emit light.
4. A method according to claim 3 wherein the light amplifying compound reacts with reactive oxygen to emit light.
- 20 5. A method according to any one of claims 1 to 4 wherein the intensity of light emitted from the sample is measured up to a maximum of five minutes, preferably up to a maximum of three minutes, after the adding of the reagent to the sample.
- 25 6. A method according to any preceding claim wherein the method further includes the step of recording the intensity of light emitted by the sample using a data recording and processing device.

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7. A method according to any preceding claim wherein the intensity of light emitted from the sample is measured using a photodiode.

5 8. A method according to any preceding claim wherein the light amplifier is luminol.

9. A method according to claim 8 wherein the reagent further includes an pH buffered iron solution.

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10. A method according to any preceding claim wherein the method further includes the steps of connecting a first inlet port of generally a fluid and light tight reaction chamber of variable capacity to a milk line in an automated milking system; connecting a second inlet port of the reaction chamber to a  
15 supply of reagent, increasing the capacity of the chamber in order to draw milk and reagent into the chamber.

11. A method according to claim 10 wherein the method further includes the step of controlling electrically operating valves provided in the inlet ports to  
20 regulate the proportion of reagent and sample drawn into the reaction chamber.

12. A method according to claim 10 or 11 wherein the capacity of the reaction chamber is increased by movement of a piston.

25 13. A method according to claim 12 wherein the piston may be actuated by means of an electrical solenoid.

14. A method of testing for mastitis in an animal, the method including the steps of collecting a sample of milk from the animal, introducing the milk

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sample and a reagent including a light amplifying compound into a reaction chamber, the light amplifying compound reacting with a substance present only in an infected sample to emit light, and immediately measuring the intensity of light emitted by the sample.

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15. A method according to claim 14 wherein the light amplifying compound reacts with reactive oxygen produced when phagocytic leukocytes phagocytose bacteria.

10 16. A method substantially as hereinbefore described with reference to the accompanying drawings.

15 17. An apparatus for testing milk in an automated milking system, the apparatus including a generally fluid and light tight chamber of variable capacity including an inlet port and an outlet port, means to increase the capacity of the chamber in order to draw fluid into the chamber from the inlet port or to decrease the capacity of the chamber to expel fluid in the chamber through the outlet port, and a light detector to detect any light emitted from the fluid in the chamber.

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18. An apparatus according to claim 17 wherein the chamber is provided with two inlet ports, one of which is connected to the milk line, and the other of which is connected to a source of reagent including a light amplifying compound, the light amplifying compound reacting with a substance present  
25 only in an infected sample to emit light.

19. An apparatus according to claim 18 wherein the inlet ports include electrically operated valves which may be operated by a controller

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automatically to regulate the proportion of reagent and sample drawn into the chamber.

20. An apparatus according to claim 19 wherein the inlet ports may include  
5 valves which are metered to ensure that the required proportion of sample and reagent are drawn into the chamber.

21. An apparatus according to any one of claims 17 to 20 wherein the means  
10 to increase or decrease the capacity of the chamber is a piston.

22. An apparatus according to claim 21 wherein the piston is actuated by  
means of an electrical solenoid.

23. An apparatus according to any one of claims 19 to 22 wherein the light  
15 detector is a photodiode.

24. An apparatus according to any one of claims 17 to 23 wherein the light  
detector is connected to a data recording and processing device.

20 25. An apparatus substantially as hereinbefore described with reference to and as shown in the accompanying drawings.

26. A milk line for an automatic milking system, the milk line including a  
conduit for milk, a generally fluid and light tight chamber of variable capacity  
25 including an inlet port and an outlet port, the inlet port being connected to the milk conduit by means of an auxiliary milk conduit, means to increase the capacity of the chamber in order to draw milk into the chamber from the milk conduit via the inlet port or to decrease the capacity of the chamber to expel

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fluid in the chamber through the outlet port, and a light detector to detect any light emitted from the fluid in the chamber.

27. A milk line substantially as hereinbefore described with reference to  
5 and/or as shown in the accompanying drawings.

28. An automatic milking system including a generally fluid and light tight chamber of variable capacity including an inlet port and an outlet port, means to increase the capacity of the chamber in order to draw milk into the chamber  
10 from a conduit for milk via the inlet port or to decrease the capacity of the chamber to expel fluid in the chamber through the outlet port, and a light detector to detect any light emitted from the fluid in the chamber.

29. An automatic milking system according to claim 28 wherein the inlet  
15 port is connected to the milk conduit by means of an auxiliary milk conduit.

30. An automatic milking system according to claim 28 or 29 wherein the milking system further includes a data processing apparatus which is connected to the light detector and which is programmed to record the amount of light  
20 detected by the light detector, to compare the results with standard data and to provide an indication as to whether the milk has been taken from an animal with mastitis.

31. An automatic milking system according to claim 30 wherein the data  
25 processing apparatus is connected to a visual display apparatus adapted to provide a visual warning that mastitis has been detected.

32. An automatic milking system according to claim 30 or 31 wherein the data processing apparatus is connected to an audible warning device adapted to provide an audible warning that mastitis has been detected.

5 33. An automatic milking system according to any one of claims 28 to 32 wherein the chamber is provided with two inlet ports, one of which is connected to the milk conduit, and the other of which is connected to a source of reagent including a light amplifying compound, the light amplifying compound reacting with a substance present only in an infected sample to emit  
10 light.

34. An automatic milking system according to claim 33 wherein the inlet ports include electrically operated valves and the milking system further includes a controller adapted to control the valves automatically to regulate the  
15 proportion of reagent and sample drawn into the chamber.

35. An automatic milking system according to claim 33 wherein the inlet ports include valves which are metered to ensure that the required proportion of sample and reagent are drawn into the chamber.

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36. An automatic milking system substantially as hereinbefore described with reference to and/or as shown in the accompanying drawings.

37. Any novel feature of novel combination of features hereinbefore  
25 described with reference to and/or as shown in the accompanying drawing.

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